UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

UNIVERSITY OF SOUTH FLORIDA
RESEARCH FOUNDATION, INC.,

              Plaintiff,

vs.

              Case No. 3:18-CV-0250-K

BRIT SYSTEMS, INC.,

              Defendant.

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<u>USFRF'S RESPONSIVE CLAIM CONSTRUCTION BRIEF</u>

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I.   **INTRODUCTION**

In an effort to avoid being held responsible for their continuous and willful infringement, Defendant use the claim construction process to attempt to set up flimsy non-infringement and validity positions. Defendant's counsel goes to great length to denigrate the great '937 patent invention in its brief as a basis for these flimsy positions. However, its honest view is displayed in Brit's President's deposition where she discussed the invention and its benefits at great length, espousing a dozen benefits and the patent inventions' achievements. It is no wonder that the '937 interface invention helped cause the drastic reduction in the detection and treatment of cancer, especially relative to women's health and mammography (App 67-70.) The Defendant is simply content to improperly import limitations from the specification and bury its head in the sand with respect to the algorithms disclosed in the specification figures and prose. However, such positions are both factually and legal untenable, and the court should adopt UNIVERSITY OF SOUTH FLORIDA RESEARCH FOUNDATION, INC. ("USFRF")'s proposed construction and find the additional terms definite.

With respect to the non-means-plus-function claims, the Defendant first seeks to construe the preambles. However, the preambles are not limitations as they simple provide a description of the structurally complete invention defined in the claims, and is not necessary to breathe life into the claims. Next, the Defendant seeks to improperly import an embodiment described in the specification to limit the claims to a review of digitized x-ray film. Defendant's position violates a cardinal rule of claim construction. Defendant also seeks to improperly import a non-existent limitation of numerical value. This limitation is not only unsupported, but it also directly contradicts how a Person Ordinarily Skilled in the Art ("POSA") would understand the values of grayscale and other similar terms to be represented. Defendant's remaining constructions fail namely because they insist on importing these two incurable defects into its remaining fragmented proposed constructions to create non-infringement arguments. Conversely, USFRF's proposed construction on the universal term seeks to limit the unnecessary fragmented constructions by asking the Court to construe a single unabridged claim term, which contains all

of the fragmented claim terms requested by the Defendant. This term is wholly supported by the intrinsic evidence found in the '937 Patent and USFRF's POSAs.

With respect to the means-plus-function claims, Defendant incredulously ignores the '937 patent specification and its figures and prose to argue that no algorithm is disclosed. Tellingly, the Defendant ignores the correct test for indefiniteness and instead conclusory states for each and every limitation that an algorithm is not present. However, the key is not whether the Defendant's attorneys would understand if there is sufficient structure to perform the means, but instead whether a computer programmer would be able, based upon the disclosure's algorithms, to identify the means to perform the function. No amount of unsubstantiated attorney argument can allow the Defendant to meet its great burden of establishing by "clear and convincing evidence" that each of the ten claims are indefinite.

II.   DISPUTED CLAIM CONSTRUCTIONS

A.   Terms 1 and 10: Preamble Terms

The parties' dispute over the Preamble Terms is whether they serve as structural limitations of the claim or instead serve to merely identify a purpose or use of the remaining claim limitations. It is axiomatic that claim preambles which only state a purpose or intended use for an invention do not limit a claim whose body defines a structurally complete invention in of itself. *Poly-America LP v. GSE Lining Tech. Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004) Here, the claim terms "*system for providing an interface,*" "*system of interfacing*," and "*system for analyzing*" appear in the preambles only and merely describe the intended use of – to interface or analyze – the structurally complete inventions recited in the remainder of the claims. As such, these preamble do not limit the patentee's claim scope and thus do not need require construction by the Court.

Term 1: "system for providing an interface"/"system for interfacing"

The use of the "*interface*" terms above in the preambles of Claims 1-3 serve only to point out the purpose or the intended use of their systems. While Defendant argues that the preambles cite essential structure necessary to give life to the claims (Defendant's Opening Claim

Construction Brief, "Defendant's Brief", p. 5), Defendant relies solely on the conclusory statement that "*interface*" is used throughout the patent to "describe a system." (*Id.*) However this statement supports USFRF's position that the '937 Patent uses "system" as shorthand to describe the structurally complete inventions in Claims 1-3, and is not a structural limitation. (*Id.* at 6; *see* also App. 17, 1:28-30.) Illogically, Defendant also relies on the preamble's actual language to argue that the "*system for interfacing*" language should serve as a limitation. (*Id.*) That Defendant can cite to no language, other than the preamble, such as the body of the claim, confirms that the interfacing language in the preambles is not necessary to breathe life into the claim, and instead only identifies the purpose of the systems recited in Claims 1-3. As such, these preamble terms are not limiting as they "merely give[] a descriptive name to the set of limitations in the body of the claim that completely set forth the invention." *Am. Med. Sys. v. Biolitec, Inc.*, 618 F.3d 1354, 1358-59 (Fed. Cir. 2010) (internal citations omitted).

If the Court believes that construing these terms would assist a jury, then USFRF's construction ("*a computer system*") accurately reflects the meaning of the preambles as illuminated by the specification, which repeatedly describes a computer-based interface system for a user. (*See, e.g.,* App.2, Abstract ("A workstation-**user interface** for evaluating computer assisted diagnosis (CAD) methods for digital mammography is disclosed.") (emphasis added.); *see also* App.16, 3:12-15; 3:28-50, 3:61-4:8, 4:34-35.)) USFRF's proposed definition, despite the Defendant's allegation, is also directly supported by a POSA who confirms the broad meaning of these terms. (App.162, ¶ 59.)

Conversely, Defendant seeks to import a limitation that "*interfacing*" requires an exchange of information between structural components. Not only is Defendant's longwinded definition overly complicated, and not of any assistance to a jury that would naturally understand a computer allows for communication between different components, but it ignores the teachings of the specification which make clear that the system provides an interface for a user (i.e. radiologist). (*See e.g.*, Abstract; 1:28-30; 215-16.) The Court should reject Defendant's attempt to use Claims 1-3's preambles to impose unnecessary limitations that are not required by the

claims and, if necessary, construe "*system for providing an interface*" and "*system of interfacing*" to be a computer system.

Term 10: "system for analyzing"

Contrary to Defendant's assertion, merely providing antecedent basis for a preamble claim term in the claim body does not trigger a *per se* rule converting the preamble to a limitation. *Summit 6 LLC v. Research in Motion Corp.*, 2012 WL 12885172, at *23 (N.D. Tex. 2012); *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1350 (Fed. Cir. 1998). To the contrary, this does not change the general rule that a preamble is not limiting unless the preamble recites essential structure necessary to give meaning to the claim. *Summit 6 LLC v. HTC Corp.*, 2015 WL 11117868, at *13 (N.D. Tex., 2015). The "*system for analyzing*" language of Claim 17 merely provides a shorthand or descriptive designation for the complete invention in the claim body that, *inter alia*, includes monitors to display the images thereon and a processor that performs the claimed functions of transforming the images and then displaying those transformed images on the monitors. (App.19, 10:50-65.) As such, while the preamble provides an antecedent basis for a single subsequent claim term, it does not thereby limit the claim's scope. *Summit 6*, 2015 WL 11117868, at *15.

Even if the preamble is limiting, which it is not, "analyzed" does not need further definition, as it is reasonably understood by a jury. (App.165, ¶ 68.) To the extent a construction is necessary, USFRF's construction ("a computer system") is supported by the intrinsic evidence. (USFRF's Opening Claim Construction Brief ("USFRF's Brief"), p. 13.) USFRF's proposed construction properly defines the limitation and would assist a jury with its understanding.

B.   Digital v. Digitized Terms (Terms 2, 9).

In a transparent attempt to shape a non-infringement argument, Defendant commits the "cardinal sin" of attempting to limit the claims to an embodiment described in the specification. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1320 (Fed. Cir. 2005). Specifically, the Defendant seeks to limit these "digitized mammogram data" terms to ***digitized film***. However, the claims are not so limited as both the claims and the specification support a broad claim construction that

encompasses much more, namely any mammogram or other medical data that has been converted to digital format (i.e. digitized) regardless of the original source; be it film, direct digital or some additional source. Additionally, Defendant's attempt to limit Claim 9 through a haphazard disclaimer argument should be summarily dismissed.

Despite Defendant's attempts, the invention of the '937 Patent is not and was not outdated technology. Specifically, the inventors of the '937 Patent were on the leading edge of the digital medical field, and realized the unique sets of issues that this brought (App.99-100, p. 177:22-178:14.) The invention itself was created to resolve these issues (App.15, 1:33:60), and replace film, "…Not to read film, but to read images from computer monitors and form diagnosis. That was the purpose of the interface."[1] (App.099, 177:10-12.) Clearly, the inventors of the '937 Patent anticipated the *imminent* arrival of digital medical images and sought to provide an interface for viewing and diagnosing which would replace reading film on a view box. The '937 Patent describes digitizing analog image data into digital images regardless of the initial source of the image data.

The claims and specification of the '937 Patent were clearly drafted with this background in mind and find ample support for USFRF's proposed construction which encompasses various types of analog image data. In relevant context, Claim 1 provides a "means for *receiving digitized mammogram data* corresponding to a film mammogram image." (Emphasis added.) Defendant unconvincingly tries to isolate portions of this statement in an effort to limit the scope of the claim such that the source of the digitized mammogram data can only be film mammogram images. (Defendant's Brief, p. 6.) However, this is incorrect, improper, and belied by the use of the term "corresponding" in the claim which means, "[t]o be similar or equivalent

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[1] Defendant's attempt to utilize purportedly conflicting statements by one inventor to limit the claims is improper. First, a clear review of the transcript demonstrates that the question was asked generally, not specifically to the patent. Second, an inventor cannot contradict the clear scope of an existing patent. *Phillips*, 415 F.3d at 1317; *see also Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1580 (Fed. Cir. 1996) ("Markman requires us to give no deference to the testimony of the inventor about the meaning of the claims.").

in character, quantity, origin, structure, or function," or "analogous or equivalent in character, form, or function; comparable." (App.396-400.) Thus, the claimed mammogram data are *similar or equivalent* to that originating from a film and thus includes other methods, like direct digital digitization, which can produce digitized image data captured by electronic x-ray sensors. (App.58, 7:6-7; App.375, ¶28.) The claim is simply not limited in the manner insisted by the Defendant. Again, USFRF's proposed construction is consistent with the scope and purpose of the invention, which is an interface for evaluating **digital** mammography. (App.02, Abstract.)

USFRF's proposed construction also finds support in the testimony of POSAs who have declared that digitizing is simply the process of converting (digitizing) an analog information to a digital image regardless of the initial source of the data. (App.373, ¶ 25.) It is clear that a POSA reading the '937 Patent at the time of its inventions would easily understand that it is not limited to digitized film images. (App. ¶¶ 24, 30) Instead, the invention takes all digital image data, regardless of the way in which they have been digitized, and allows for analysis of the digital image using computer assisted diagnosis (CAD) methods. (App.02, Abstract.) In fact, Defendant's own technical dictionary definition of "*digitize*" confirms this point: "to convert analog information into digital form, which is necessary for a digital computer to process it." (App. 49-051 to Brit's Brief.)

In contradiction to its own evidence, Defendant premises its argument almost entirely on the following proposition: "Moreover, the *specification* of the '937 Patent makes it clear that digitization of the film images was a necessary first step prior to viewing them, although the actual digitizer used for digitization could vary." (Defendant's Brief, p. 6 (emphasis added).) While the proposition goes unsupported, it telegraphs Defendant's attempt to improperly import a limitation from the specification into the claims. *See Superguide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004); *see also SRI Int'l Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) ("If everything in the specification were required to be read into the claims, or if structural claims were to be limited to devices operated precisely as a specification-described embodiment is operated, there would be no need for claims.")   A

patentee is required under 35 U.S.C. § 112 to provide a written description of what they believe to be the *preferred* way—but not *every* way—they know how to practice the invention. *See GoLight, Inc. v. Wal-Mart Stores, Inc.,* 355 F.3d 1327, 1331 (Fed. Cir. 2004). A patentee is not required to "describe in the specification every conceivable and possible future embodiment of his invention." *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002). "Absent a clear disclaimer of particular subject matter, the fact that the inventor anticipated that the invention may be used in a particular manner does not limit the scope to that narrow context." *GoLight*, 355 F.3d at 1332 (citations omitted).

Defendant clearly ignores this fundamental claim construction axiom and argues that the specification requires the digitization of ***film images.*** While the specification provides that the source of mammographic data used in this embodiment is the I magclear R3000 x-ray film digitizer (App.016, 4:37-39), the '937 patent also clearly states, "It is to be understood by one of skill in the art that the hardware detailed herein is not intended to form a limitation on the invention, and that equivalent devices may be substituted therefor." (*Id.,* 3:19-22.) Additionally, the specification also clearly states that the patented invention is not limited to mammography, but is to be used in all medical imaging fields – which is significantly broader then simply x-rays as the Defendant contends. (App.016, 3:22-26.) There is nothing within the scope of the claim limiting the digital or digitized image data to film, and the Court should reject Defendant's improper attempt to import limitations from the specification into the claims through its proposed construction.

Defendant also seeks to limit term 9 ("digitized medical image" [data]) to breast image data despite the claim's broad recital of the phrase "medical image." Defendant argues that USFRF obtained Claim 3, where digitized medical image data appears, fraudulently because it made misleading statements, and thus it, "effectively disclaimed a scope of Claim 3 that exceeds the statements made characterizing Claim 1." (Defendant's Brief, p. 13.) Defendant's Brief is both factually and legally inaccurate.

The Federal Circuit has made clear that a disclaimer of claim scope can *only* apply if it is "both clear and unmistakable to one of ordinary skill in the art." *Elbex Video, Ltd. v. Sensormatic Elecs. Corp.*, 508 F.3d 1366, 1371 (Fed. Cir. 2007) (quotations omitted). When determining whether a disclaimer applies, a court must consider the statements in the context of the entire prosecution. *MIT v. Shire Pharm., Inc.*, 839 F.3d 1111, 1119 (Fed. Cir. 2016). If the challenged statements are ambiguous or amenable to multiple reasonable interpretations, prosecution disclaimer is *not* established. *Id.* In this instance, the applicant addressed this issue by arguing that the prior art did not contain the requisite user control of the illumination state, by focusing on mammography – not by arguing that the claim was so limited. (Defendant's App.036-037, "The limitation claimed by the present invention of providing a means to control the illumination state in a displayed form and implementing the control instruction upon the form is not described by Marshall and would not have been obvious at the time the invention was made.") There is no clear and unmistakable disclaimer limiting the scope of the claim from medical images generally to a breast image, and thus there is no prosecution history estoppel. Additionally, there was no misrepresentation. The patent examiner knew the express language of Claim 1 and 3 and could have, if it felt that USFRF was being disingenuous its response, maintained its rejection based on the prior art. The examiner instead looked at the claims and granted the allowance. (App.037-039.)

Accordingly, Defendant's assertion that this term, as it appears in Claim 3, requires data originating from mammogram films is flawed, finds no support in the intrinsic evidence, and should be rejected. The Court should therefore adopt the USFRF's construction for this term and ignore Defendant's improper attempts to limit its scope to film.

C.   Numerical Values (Terms 3, 4, 5, 6, 7, 8)

Defendant proposes an erroneous construction for each of the terms identified above, by seeking to import a limitation of "numerical values" into each of these terms. Defendant's actions evidence a transparent attempt to manufacture future non-infringement arguments. However, inclusion of the improper "numerical value" limitation goes entirely unsupported in

Defendant's filings. (*See e.g.* Defendant's Brief, p. 8, "As such BRIT's construction of 'grayscale values' simply references a ***numerical value*** for each shade of gray."; "the optical densities are appropriately understood as having their own ***numerical values***." (emphasis added).) The fact that Defendant has failed to provide any support (whether with reference to the patent specification, file history, or extrinsic evidence) is unsurprising, given that numerical values are not mentioned, described, or required anywhere in the '937 Patent. Defendant's attempt to import this limitation into these terms is an improper attempt to limit the proper scope of the claims at issue and must be rejected.

This position is reinforced by the POSAs who agree that "numerical values" are not properly understood to be part of these claim terms. For instance "grayscale values," in use are not referred to by a certain number, and Radiologist do not utilize numerical readings or standards for selecting grayscale values. (App.161-163, ¶¶ 58, 61.) The numerical value limitation has no support in either the intrinsic or extrinsic evidence and should be rejected wholesale.

Term 3: **"Grayscale Value"**

USFRF suggests that this term does not require construction by the Court. However, to the extent a construction is needed, USFRF's proposed construction is supported by the claim language (App.19, 9:13-14) which uses "luminance value" as well as the specification (App.17, 5:39-41) which permits adjustment of the luminance or contrast in shades of gray from black to white. The specification does not employ any numerical limit with reference to the claimed grayscale. Defendant's own dictionary definition even confirms that grayscale is measured in "black, white, and multiple shades of gray in between" – not numerical values. (Def.'s Brief, App. 52.) USFRF's construction should therefore be adopted.

Term 4: **"Optical Densities"**

Again, USFRF suggests that this term does not need to be construed because the term is commonly understood, and further definition would merely serve to confuse the jury. However, to the extent a construction is needed, the plain and ordinary meaning is the proper construction.

Outside of the improper "numerical value" limitation, Defendant's proposed construction also seeks to limit the images to film. As discussed above, with respect to Terms 2 and 9, the attempt to impermissibly limit the claim to an embodiment in the specification is improper and should be rejected. *Phillips,* 415 F.3d at 1323. Again, there is no requirement in the intrinsic or extrinsic evidence that requires that the image data originate with film. The '937 Patent is only concerned with receiving digitized information regardless the source of the information/data. USFRF's proposed use of "analog" is broader than the proposed film limitation, and more accurately covers the scope of the claim as mandated by the specification and other evidence.

Term 5: "plurality of varying resolution forms, each form having [different/a different set of] grayscale values"

Outside of the improper numerical limitation, the parties' proposed constructions are substantially similar. However, USFRF's proposed construction should be adopted as it more accurately captures the scope of the limitation which requires "a plurality of varying resolution forms," which is absent from the Defendant's proposed construction. Additionally, USFRF's construction calls for the different image versions to be displayed on different windows of a **display monitor**, whereas the Defendant uses display screen. The language of the claim requires, "a monitor for displaying image data in a predetermined format and in varying grayscale, the monitor having a predetermined illumination capability." (App.18, 8:58-60.) Despite offering no intrinsic support for its construction, Defendant seeks to improperly modify the claim language in order to later assert a non-infringement argument. Again, "screen" is not supported, and would confuse a jury who would be trying to distinguish between the opening portion of the claim that uses monitor and the later portion of the claim that uses screen. For proper context, the proposed construction should use language that mirrors the claim, and USFRF's proposed construction should be adopted.

Term 6: "predetermined illumination state"

Defendant provides no compelling reason why this term requires construction. To the extent the term needs to be construed, the differences between the parties' constructions of

"grayscale" have already been identified and argued. Summarily, USFRF submits no construction is necessary, and to the extent it is necessary, any construction that includes the "numerical value" limitation is improper as absolutely no support for inclusion of this limitation exists. Therefore, if construction is necessary, USFRF's construction should be adopted. *Alternatively,* USFRF can agree to a proposed construction that does not include "medical."

Term 7: "control the illumination state"

Defendant again provides no compelling reason why this term requires construction. "Control the illumination state" is readily understandable, and there is no special meaning or understanding of the term that would readily assist a jury. To the extent a construction is necessary, USFRF's construction should be accepted as Defendant's construction again seeks to import improper limitations to the claims.

The claim requires control and that is it. There is no requirement that this control be "Manual." Importing this limitation into the claim serves to impermissibly narrow the scope. "Dynamically," is not present in the specification and there is no basis to import this vague and ambiguous limitation into the claim. It is also not clear as to what is meant or what is required to "dynamically adjust" as Defendant proposes this term means. The inclusion of this unsupported limitation is not helpful and only will serve to confuse a jury. If construction is needed, USFRF's construction of "ability of a user to adjust" sufficiently captures the "control" requirement of the claim language without adding any unnecessary, confusing, or impermissible limitations.

Term 8: "to display a mammogram image in a different form in each window with grayscale values that, along with illumination characteristics of said monitor, appears to a user as a mammogram in each window under a predetermined illumination state"

As Defendant contends this term is indefinite, it bears the burden to prove by clear and convincing evidence that no "informed and confident choice is available among the contending definitions" to those of ordinary skill in the art. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014); *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2130 (2014). Defendant has failed to meet its lofty burden to invalidate the claim.

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All that is required by this Claim 2 limitation is a monitor with its own visual settings (or characteristics) allowing it to display different forms of a single image in different windows each with different grayscale values. (App.19, 9:32-45; App.17, 5:39-64.) A POSA would be able, with reasonably certainty, to identify the illumination characteristics of the monitors within the '937 Patent as every monitor necessarily has its own illumination characteristics. Indeed, the specification identifies:

> The characteristics of display monitors 14,16 are important to proper implementation of the present invention. Screen film mammography is interpreted on viewboxes with an average luminance of about 3000 nit (880 ft-L),10 which gives excellent back-lighting to x-ray films. In contrast, the typical color monitor provided with the Sun workstations is only about 30 ft-L. The maximum display resolution of 1280×1024 pixels with standard monitors is not enough for x-ray films digitized at 30 μm/pixel, which are in the range of 3000×5000 pixels. Dome Imaging Systems Inc. (Waltham, Mass.), manufactures 5-megapixel display cards for the Sun that are capable of driving high-resolution grayscale monitors. The monitors 14, 16 chosen are the DR-110 from Data Ray Corp (Westminister, Colo.). These are 2048×2560 pixels at 74 Hz, with a luminance of 120 ft-L and 30 transmissivity.

(App.016, 4:9-26.) The '937 Patent goes so far as to identify the model and manufacture of examples monitors as well as discussing their illumination characteristics (i.e., resolution capabilities), and the display card necessary for driving the high-resolution grayscale monitors. (App.016, 4:18-21.) Based on this information, a POSA would be able to reasonably understand and understand the required illumination characteristics of the monitor because the monitor's capabilities are specifically identified. (App.380-81,¶¶ 42-44.)

Defendant can merely assert attorney argument that a POSA would not be able to identify the monitor characteristics. However, this is directly rebutted by a POSA. (*Id.*) Moreover, Defendant's artificially high (and legally unsupported) bar requiring a discussion on "scaling" or considerations made in selecting the monitor is not the legal standard for definiteness, nor . Again, perfection in claim drafting is not required. Defendant has failed to even remotely reach the lofty "clear and convincing" standard required to invalidate the claim.

Outside of the improper "numerical value" limitation and the fact that "grayscale" does not need to be defined, Defendant's remaining proposed construction is not otherwise objectionable. USFRF would be amenable to a construction that reads, *"Display concurrently on different windows of a display screen different image versions of a single mammogram image, with a grayscale value automatically assigned in advance to the image version."*

D.   Universal Term

As seen above, Defendant seeks a piecemeal construction of three separate claim terms ("digitized mammogram data," "grayscale values," and "optical densities") taken out of context to create otherwise non-existent non-infringement arguments. Instead, the Court should construe them as a single term which in context will readily help the jury with its role, and more accurately reflect their true meaning.

The proposed construction of "*the digitized mammogram data having grayscale values corresponding to optical densities of the film mammogram image*" does not rewrite or contradict the claim language, but instead, appropriately captures and recites the claim limitations. By construing the instant term, the Court can avoid piecemeal claim interpretations and resolve the dispute in a quick and efficient manner that more accurately comports with the '937 Patent.

E.   The Terms that Defendant's Allege are Indefinite are Fully Supported by the Specification.

Try as it might, Defendant has not meet its lofty burden of showing by clear and convincing evidence that each of the asserted claims is indefinite because the '937 Patent purportedly fails to disclose an algorithm in the specification. Contrary to Defendant's assertions, the disclosure of hardware, software and the interlaced cooperation between the two provided in the figures and specification of the '937 Patent discloses a sufficient algorithm to enable a POSA to understand the bounds of the claim, this is why the examiner allowed the claims during the

prosecution history.   (App.037-41.)[2] No amount of unsupported attorney argument will change this simple fact.

An algorithm is "a step-by-step procedure for accomplishing a given result," and may be expressed "in any understandable terms including a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure." *See Ergo Licensing, LLC v. Care Fusion 303, Inc.*, 673 F.3d 1361, 1365 (Fed. Cir. 2012) (citations and internal quotation marks omitted*); see also Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1341 (Fed. Cir. 2008). "[A]lgorithms in the specification need only disclose adequate defining structure to render the bounds of the claim understandable to one of ordinary skill in the art." *AllVoice Computing PLC v. Nuance Commun., Inc.*, 504 F.3d 1236, 1245 (Fed. Cir. 2007) (internal citation omitted) (with emphasis).

The '937 Patent discloses hardware for implementing the claimed invention. (App.016, 3:27-67, 4:1-26). In addition, the '937 Patent discloses various software, compatible with the hardware, (*Id.*, 4:34-36 "This combination of hardware and software provided a solid base for the display station project."), for implementing the claimed invention. (*Id.*, 4:26-33.) The specification of the '937 Patent also provides algorithms in the form of flow charts shown in Figs. 1 and 3, illustrating the steps of the claimed invention. (App.003, 004.) Other algorithms are described in the language of the specification.

However, Defendant contends that though the software existed, the '937 Patent neglects to disclose any of the algorithms or functions it implemented because the patent does not disclose functions, routines or codes. (*Id.)* Despite the Defendant's contention, a computer code is not required to be included in the patent specification. *See Aristocrat Technologies Australia Pty Ltd. v. International Game Technology*, 521 F.3d 1328, 1338 (Fed. Cir. 2008) (the patentee is

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[2] Defendant disingenuously leads the court to believe that the standard at the time the '937 Patent was allowed was different then current standards. (Defendant's Brief, p. 2, "the '937 Patent must overcome the significant body of more recent federal circuit precedent that substantially raises the bar…").   This is false and misleading.   The requirement that a specification must disclose an algorithm for performing the claimed function was first set forth in *WMS Gaming, Inc. v. Int'l Game Tech.*, which issued four years before the '937 Patent was granted. 184 F.3d 1339, 1348 (Fed. Cir. 1999)

not "required to produce a listing of source code or *a highly detailed description* of the algorithm

to be used to achieve the claimed functions in order to satisfy 35 U.S.C. § 112 ¶ 6.") (emphasis

added.) Moreover, the assertion that none of the specific functions, routines, or tools that went

into the software program are disclosed in the '937 Patent is patently false. For example, Fig. 3

of the '937 Patent discloses a flow chart, similar to the flow chart relied upon in *AllVoice* that

was found to be a sufficient algorithmic disclosure as reflected in the side-by-side comparison of

their figures below.
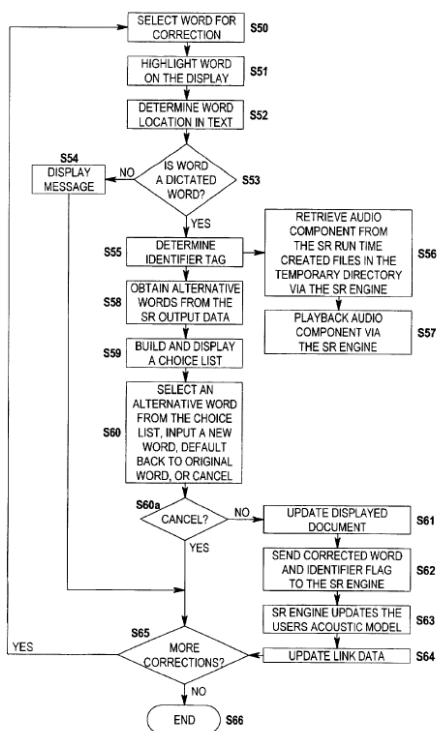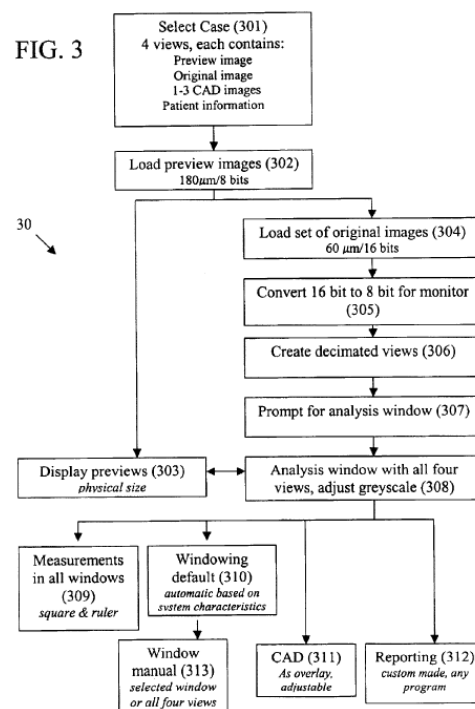
Id at 1245; (App.003.) Moreover, the very first block (step) of each flow chart provides a user

selected step. Despite the Defendant's unsupported legal position, there is no basis to ignore the

algorithm in Fig. 3 simply because it describe the steps taken from a user's perspective. The '937

Patent discloses a flow chart that provides steps such as selecting, loading (i.e. receiving),

converting (i.e. transforming), creating, and displaying. Although a user may use a mouse to

select (App.016, 4:66-67; App.017, 5:1-2) from options displayed on a computer screen, the

software is performing the steps of loading, converting, creating and display. (App.017, 5:5-7,

5:49-51, 5:56-64, 6:5-6, 6:15-19, 6:22-42, 6:50-54, 6:60-61; App.018, 7:9-12.) Like the flow

chart in *AllVoice*, a POSA would be able to rely on the algorithm disclosed in the '937 Patent, via at least Fig. 3 and the accompanying specification, to render the "bounds of the claim [of the '937 Patent] understandable to one of ordinary skill in the art." *AllVoice*, 504 F.3d at 1245.

In an attempt to discredit the disclosed algorithm, Defendant repeatedly cites to *Summit 6*, 2015 WL 11117868, at *26 (N.D. Tex., 2015) (Brief, p. 18). However, this reliance is misplaced. The Court in *Summit 6* did not invalidate the patent solely because of the user issue. Instead, the court relied on the Defendant's expert witness to conclude that the patents at issue did not include flowcharts (as the '937 Patent does), and instead included figures illustrating the appearance of the media object identifier, but does nothing more to describe how the software functions. *Id.* at *27 (APPX See U.S. Patent No. 6,895,557, Figs. 1-4b.) Unlike *Summit 6*, the '937 Patent discloses a flowchart, specific prose, and figures to identify how the features of the software work to present the user with different options.

In addition to the algorithm, the '937 Patent undisputedly discloses software. In *TecSec, Inc. v. Intl. Bus. Machines Corp.*, 731 F.3d 1336, 1349 (Fed. Cir. 2013), the court found a sufficient algorithm where the specification "disclose[d] . . . specific software products and how to use those products to implement the claimed functions, which include 'selecting an object to encrypt,' 'selecting an encryption algorithm,' and 'encrypting the object,' among others." *Id*. Similarly, the specification of the '937 Patent discloses software, and how to use the software to implement the claimed function. (App.016, 4:27-35.) The specification of the '937 Patent is plentiful of explanations of the use of the software to implement the claimed function, and for A POSA to understand the bounds of the claim. (*See* App.017, 5:5-7 ("It may also contain processed versions of the originals by CAD techniques as well as text files with patient information."), 5:49-51 ("For quick settings, preferred values may be stored and applied to as many different images as desired."), 5:56-64 ("Selecting the 'autoscale' button 411 activates a scaling process based upon a model that takes into consideration the properties of the film and the digitizer, monitors, and human vision and then matches them for optimal reading."), 6:5-6 (". . . computer classification of an identified abnormality as benign or malignant."), 6:15-19

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("Selection of the 'detection' button 407 causes the system to display a combined detection image including the outputs of one or more computer programs that are designed to detect different abnormalities.), 6:20-22 ("Selection of the 'segmentation' button 408 permits the viewing of a finding from a specific small region of the image with an outline of any found mass."), 6:32-34 ("Selection of the 'diagnosis' button 409 accesses a computer-determined likelihood of malignancy in a specific region."), 6:60-61 ("The hardware and software used here are sufficient enough to enable quick display, panning, and grayscale adjustments."); App.018, 7:9-12 ("The CAD images are loaded on demand and are also kept in memory.").

The '937 Patent does not simply disclose a "black box" as was done in *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1383 (Fed. Cir. 2009), where the Plaintiff attempted to state, "the access control manager assigns an access and control" and the specification did not contain a description of the structure or the process of assigning. *Id.* Instead, the '937 Patent provides an algorithm which discloses adequate defining structure to render the bounds of the claim understandable by a POSA. *Finisar Corp.*, 523 F.3d at 1340. This argument is factually unrebutted outside of attorney argument.

Defendant's unsubstantiated attorney argument does not meet its high burden of establishing by "clear and convincing evidence" that each of the ten claims are indefinite. As set forth with specificity in USFRF's's opening brief, each one of the ten terms at issue has sufficient structure for the agreed upon function, and USFRF's unrebutted proposed constructions should be adopted.

> ***Term 12:*** **"means for transforming the digitized mammogram data into a plurality of varying-resolution forms, each form having different greyscale values" (Claim 1)**

Defendant contends, without any factual support or corresponding agreement from a POSA, that the boxes (steps) 304-306 in Fig. 3 are not sufficient structure or algorithms because they merely describe the user interface. (Defendant's Brief, p. 19-20.) Instead of describing the user interface, the boxes and the Fig. 3 describes the steps the software takes to perform the

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recited functions, namely using SUN's XIL imaging library to take the data and convert it into images.   (App.16, 4:30; App.373-76, ¶¶25-31.) During this process, the original image is converted from a 16 bit image into an 8 bit image that can be properly displayed on the monitors. (App.004, Fig. 3, Block 305; App.15, 2:20-27; App.17, 5:21-28; App.373-75 ¶¶ 25-28.) By reducing the number of pixels in an image, this decimating step, e.g., the entire image is made displayable on the monitor. (App.372, ¶ 21.) Once the images are loaded, decimated views 41, 42 that can be displayed concurrently with a higher resolution image of step 308 with each of the views having different luminescence. (App.17, 5:23-28.) Windows 41 and 42 display decimated images allowing the entire breast to be displayed in one window, albeit at low resolution. (App.005, Fig. 4.) Windows 43 and 44 show full resolution images of the same breast. Since they are full resolution images, only a small section of the breast can fit the window. What is shown, for example, in window corresponds to the dotted square of window 43. (*Id.*)

Finally, each image can then be individually adjusted, including greyscale values, controls of which are shown in the top right corner of Fig. 4 (App.17, 5:39-51.) A POSA would have understood the necessary coding to execute algorithms to transform the digitized mammogram data into a plurality of vary-resolutions forms, each form having different grayscale values per the figures and prose. (App. 370-72, ¶¶17, 19-23.)

Despite Defendant's belief, this is not akin to *Summit 6* where no flowcharts were provided, and instead is similar to *Typhoon Touch Techs.,* where the court noted that, "defendants have directed us to no evidence that a programmer of ordinary skill in the field would not understand how to implement this function." 659 F.3d 1376, 1385 (Fed. Cir. 2011). In this instance, a POSA has already indicated that the structure is sufficient with specific reference to the figures and specification of the '937 Patent. (App.310-311, ¶ 7.5.3.1.) Term twelve is definite, and USFRF's unrebutted construction should be adopted.

> **Term 13: "means for communicating with a monitor to display the plurality of forms, each form within a different window on the monitor, and each form having a predetermined illumination state corresponding to the greyscale values thereof" (Claim 1)**

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Despite Defendant's unsupported arguments, Term 13 is definite. Fig. 3 and Box (step) 308 provide an algorithm which requires an analysis window to produce four views with different set of grayscale values, i.e. luminescence, which can be adjusted to improve radiologist ability to detect abnormalities. (App.15, 2:22-27; App.15, 2:22-27.) This is not a user description of how the user interacts with interface. A POSITA would have also understood, from the '937 Patent embodiment description, that the software implemented to achieve the conversion would comprehend interfacing to a user such that the user would be able to select the desired view presented on the monitor by using, *e.g.*, a pointing device, such as a mouse. (McAlexander Decl. ¶ 20.) This is unrebutted by the Defendant.

> ***Term 14:*** **"means for receiving from the user communication means a control instruction for changing an illumination state in a displayed form and for implementing the control instruction upon the displayed form, thereby permitting the user to control the illumination state of each displayed form" (Claim 1)**

What the Defendant contends is a very particular and distinct function is really only allowing the user to adjust the illumination state as shown for example in Fig. 3 and the specification. (App.004, Fig. 3, App.017, 5:39-51.) Defendant alleges without factual support, that the function disclosed is insufficient because although software and the specific features have been disclosed, one skilled with the software would not be able to understand how to create a control instruction. This is patently false. With the disclosure of the specific hardware (workstation processor 10 receiving control instructions through a user input device 18) and software (workstation processor executing the control instruction at step 308 of FIG. 3 using XIL Image Library to control illumination via changing of the greyscale values), a programmer with ordinary skill would be able to draft simple code to allow the processor to receive from the user, a control instruction for changing an illumination state in a displayed form, thereby allowing the user to control the illumination state of each image. *Typhoon Touch Techs.,* 659 F.3d at 1385. (App.321, ¶ 7.5.3.7.; App.3, FIG. 2; App.16, 3:45-48, 4:66-5:1; App.17, 5:39-44; 6:7-12.)

Defendant's allegation that the claim contains an incurable defect that cannot be resolved by an expert is untrue. (Defendant's Brief, p. 22) Even the case the Defendant relies on to advance the faulty argument, *Mobile Telecommunications Techs*, contains a citation to *Typhoon* for USFRF's proposition that a computer programmer would be able, based upon the disclosure's algorithms to identify the means to perform the function. 2014 WL 5766050, at *25 (E.D. Tex., 2014) ("On balance, these disclosures amount to a sufficient algorithm, in prose form. *See Typhoon Touch*, 659 F.3d at 1386. ('Indeed, the mathematical algorithm of the programmer is not included in the specification. However, as precedent establishes, it suffices if the specification recites in prose the algorithm to be implemented by the programmer.'") Indeed, Defendant attempts to stretch *Mobile* to untenable lengths. Instead of contradicting USFRF's position *Mobile* supports it, and only finds that an expert cannot cite to a patent incorporated by reference to support its recited function. *Id.* at 18-21. USFRF's expert does not need to cite to another patent as the disclosure of the '937 Patent provides sufficient means.

> ***Term 15:* "said processor. . . being responsive to a signal from said input device to transfer digitized image data from said electronic storage medium to said monitor in a way that causes the monitor to produce a display having a plurality of windows and to display a mammogram image in a different form in each window with grayscale values that, along with the illumination characteristics of said monitor, appears to a user as a mammogram in each window under a predetermined illumination state" (Claim 2)**

Contrary to Defendant's assertions, this term does not require construction under §112, ¶ 6 As an initial matter, Defendant misstates the law. The Federal Circuit in *Apple* characterized the means plus function presumption as strong and "has seldom held that a limitation without recitation of 'means' is a means-plus-function limitation. *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1297 (Fed. Cir. 2014). Moreover, Defendant has attempted to apply *Aristocrat* in reverse, arguing that because "processor" does not adequately define the scope of a means-plus-function limitation, it also cannot describe sufficient structure to avoid means-plus-function treatment when recited in the claim itself. (Defendant's Brief, 24 generic claim term 'processor' conveys

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insufficient structure…".) However this is not the correct test. *Smartflash LLC v. Apple Inc.*, 77 F. Supp. 3d 535, 541 (E.D. Tex. 2014). The standard used to prove sufficient structure to avoid means-function-treatment is not identical to the standard for identifying corresponding structure to a means-plus-function claim. *Id. citing* 757 F.3d at 1298.

Had the Defendant applied the proper test it would have seen that Claim 2 places direct structural limitations on the processor. Claim 2 also states that the processor is adapted to "receive input signals from said input device" and "transfer digitized image data from said electronic storage medium to said monitor." As the Court noted, "processor" is a structure-connoting term. *Smartflash LLC*, 77 F.Supp.3d at 541. A POSA would understand that uncontested structures – a processor, an input device, a storage medium, a monitor, and the connections between them – already appear in the claim, and the assertion that claim lacks structure fails *ab initio*. (App.314, ¶ 7.5.3.4.). Instead, the Defendant cites the equivalent of an annotated patent digest of case law arguing. This does not advance the ball. *Smartflash.* at 543 ("Defendants cite case law instead addressing the adequacy of the specification's disclosure for defining claim scope...") With no factual evidence and failure to dispute the inherent structure within Claim 2, Defendant cannot overcome the burden, and the term is not a means-plus-function claim.

> ***Term 16:*** **"said processor being adapted to receive further input from said input device related to the mammogram image in a selected window, said further input from said input device including input that selectively controls the grayscale values of the mammogram image in the selected window, thereby enabling an operator handling said input device to selectively control the illumination state with which the mammogram image in the selected window is displayed to the operator"** **(Claim 2)**

Defendant does not even attempt to address whether there is sufficient structure within Claim 2, and instead assumes the term is §112, ¶ 6. This is a fatal error. Again, because the claim does not use the "Means Plus" language there is a strong presumption that the claim is not subject to §112, ¶ 6. Defendant does absolutely nothing to rebut this presumption. As discussed

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above, the uncontested structures – a processor, an input device, a storage medium, a monitor, and the connections between them – are specifically identified in the claim.

> ### Term 17: "means for establishing electronic communications with a processor for receiving a stored digitized medical image comprising data representative of a plurality of greyscale values" (Claim 3)

The defendant contends the claim is indefinite because the patent fails to describe how the processor is programmed to understand inputs from a mouse or keyboard. (Defendant's Brief, p. 26.) However, unlike the *Minerva* case, the recited claim is not a one-step algorithm. *Minerva Indus., Inc. v. Motorola, Inc.*, 2010 WL 446502, at *15 (E.D. Tex., 2010).

Once a selection is made, the processor 10 responds to that user selection input by executing the instructions that correspond to the selection, such as loading preview selection 302 from the image storage data 12 and displaying a full size image overview 303 which is shown in FIG. 3. (App.16, 3:6-4:3; App.17, 5:7-14; App.18, 7:3-10.) The disclosed multistep algorithm is sufficient to enable a programmer with ordinary skill to implement this function. *Typhoon Touch Techs.,* 659 F.3d at 1385; *see also, Med. Instrumentation and Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1214 (Fed. Cir. 2003).

> ### Term 18: "means for receiving a signal from a user-operable device" (Claims 3, 17)

Defendant's contention that that there is no algorithm describing how the processer should respond to a user input signal is false. According to the disclosed algorithm, the processor receives control instructions through a device (from e.g. a mouse 18). (App.3, FIGs 1, 2; App.16, 3:45-48, 4:66-5:1; App.17, 5:39-44, 6:7-12.) The control instructions are sent by the user and read by the workstation processor 10 executing the control instruction at Step 308 of FIG. 3 (XIL Image Library), performing the processing algorithm. (App.16, 4:28-33, 4:64-5:2; App.17, 5:29-32, 5:39-44.) With the disclosure of the specific hardware and software, a programmer with ordinary skill would be able to implement this function. *Typhoon Touch Techs.,* 659 F.3d at 1385. (App.321, ¶ 7.5.3.7.)

> ***Term 19:*** **"means controllable by a signal from the user-operable device for transforming the image into a plurality of varying-resolution forms, each form having a different set of greyscale values" (Claims 3, 17)**

As already discussed, the '937 Patent sufficiently discloses an algorithm to identify how the processor transforms the image. Specifically, the processor performs the algorithm of Fig. 3, to change the pixel sizes of binary information to form a plurality of varying forms each with different greyscale values based on signals from user input devices. (App.4, FIG. 3; App.15, 2:20-27; App.17, 5:21-28.)

Defendant contends that again Fig. 3 just describes how a user proceeds, however, Fig 3 is clearly dictating, in algorithmic form, the step by step instructions (upload originals 304, convert images 305, create decimated views 306) a processor is performing to allow the user to use the system. Again, the patent does not have to list source code or a highly detailed description of the algorithm. All that is necessary is that a POSA would review Fig. 3 and understand how the specification provides the steps to transform an image into a plurality of varying-resolution forms. (App.310-311, ¶ 7.5.3.1; App.371, ¶ 18.)

> ***Term 20:*** **"means for displaying the forms on the display means, each form displayed within a different sector of the display means" (Claim 3)**

Defendant contends that there is not sufficient structure to provide the means for displaying images in a window on the monitor. (Defendant's Brief, p. 29.) Defendant attempts to do this by minimizing the importance of the algorithm disclosed in Box 308 of Fig. 3. However, the sufficient support also comes from the specification. (App.3-4, Figs. 1-3; App.15, 2:27-30; App.16, 4:24-26; App.17, 5:21-28.) Ultimately, Defendant cannot dispute that USFRF's POSAs are able, based on the algorithm disclosed in the '937 Patent, via at least Fig. 3 and the accompanying specification, to render the "bounds of the claim [of the '937 Patent] understandable to one of ordinary skill in the art." *AllVoice*, 504 F.3d at 1245.

Term 21: **"means for displaying a first form on the first monitor and a second form on the second monitor (Term 21 in Claim 17)"**

Defendant alleges again without factual support, that there is no algorithm for displaying the images on the two monitors. This is false. The '937 Patent states that once the images are loaded, an initial image (full-size) is displayed at step 303 of the Fig. 3 algorithm on one of the two monitors and an ML (left and right medio-lateral) image is displayed on the other. (App.17, 5:7-13.) As stated in the specification, one of the steps in the Fig. 3 algorithm is to display the CC views "on one of the two monitors" of the workstation and the "ML views on the other monitor." (App.17, 5:9-12.) To the extent any control instructions are necessary, as Defendant contends, the disclosure of the specific hardware and software, a programmer with ordinary skill would be able to implement this function. *Typhoon Touch Techs.,* 659 F.3d at 1385. (*See* App.313-314, ¶ 7.5.3.3.)

Ultimately, Defendant faces an insurmountable uphill battle to invalidate the claims given the clear and convincing standard and its failure to retain an expert to opinion whether the algorithms in the '937 Patent specification disclose adequate defining structure to render the bounds of the claim understandable. Relying on attorney arguments to consistently contend that Fig. 3 is a "black box" with no sufficient structure and ignoring the prose in the specification, Defendant fails to meet this burden. With its disclosure of specific hardware and software, a POSA would be able to implement this function. To the extent the plain language of the specification falls short (which USFRF alleges it doesn't), a disclosure of the detailed algorithms is unnecessary if there is software linked to the function and a POSA would know the kind of program to use. *See, e.g., Med. Instrumentation and Diagnostics Corp.*, 344 F.3d at 1214.

III.   CONCLUSION

For the foregoing reasons, USFRF respectfully requests that the Court adopt its proposed constructions of the disputed terms contained in the asserted claims.

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<u>CERTIFICATE OF SERVICE</u>

I hereby certify that a true and correct copy of the foregoing was filed electronically and served on all counsel of record on October 1, 2018 via the Court's ECF system.

/s/ Steven A. Caloiaro
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